

# SIMPLE GUIDE TO SOLITARY BEES IN IRELAND

## PART 1

How to tell it's a bee

How to identify to genus

How to tell males from females

# HOW TO FIND SOLITARY BEES?



Look for suitable nesting areas – often south facing banks/walls with a stable substrate that they can burrow into. They don't tend to travel far from their nests so this is key.



It's more unusual to see them foraging, but you will when you get your eye in

**TIP:** Check open flowers on bright days with cloudy skies. Sometimes solitary bees will get 'stuck' on flowers if it suddenly clouds over. They have to wait for more sun so they can warm up and fly off again.

# HOW TO CATCH?

**TIP:** White nets are easier to use than black when catching solitary bees



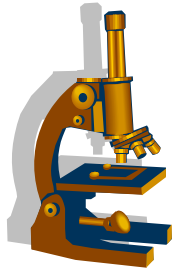
A butterfly net is the best option. Many solitary bees are very small & catching them requires practise. It's generally best attempted as they are entering or leaving nest sites.



You can also use Pan Traps. This is recommended if you are carrying out systematic sampling. Pan traps are shallow containers that are filled with water (the bees come to forage and get trapped). They are painted blue, white and yellow and covered with UV paint. They are generally placed in groups of three (one of each colour) and left on a site for a period of 8-12 hours.

# IDENTIFYING SOLITARY BEES

1. You have to lethally sample in the vast majority of cases



2. You need microscope facilities

3. It is difficult

# If you're a beginner you'll face three initial challenges:

1. How do I know it's a bee?
2. How do I tell what genus it is?
3. How do I know if it's a male or a female?

# CHALLENGE 1: HOW DO I KNOW IT'S A BEE?

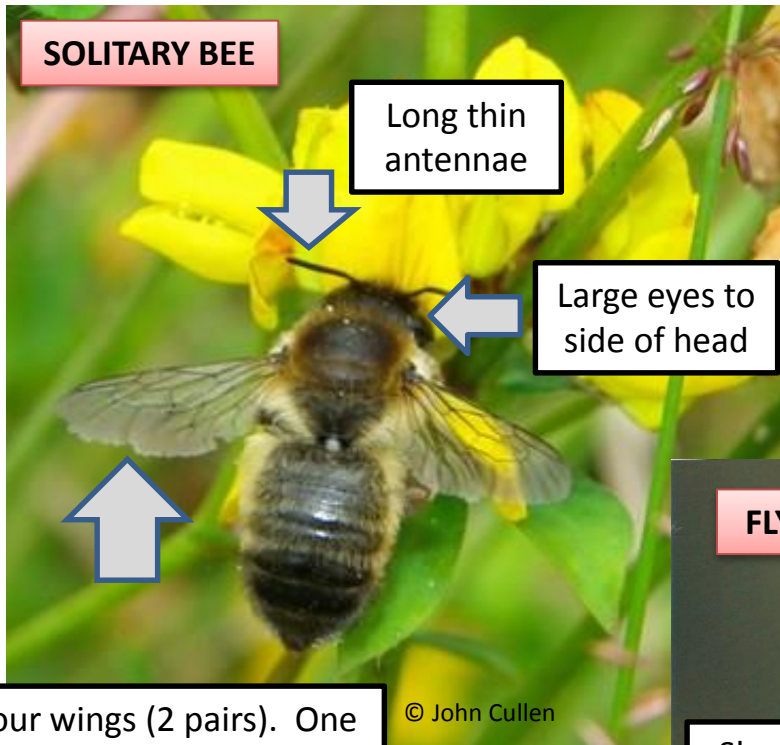


# CHALLENGE 1: HOW DO I KNOW IT'S A BEE AND NOT A FLY?

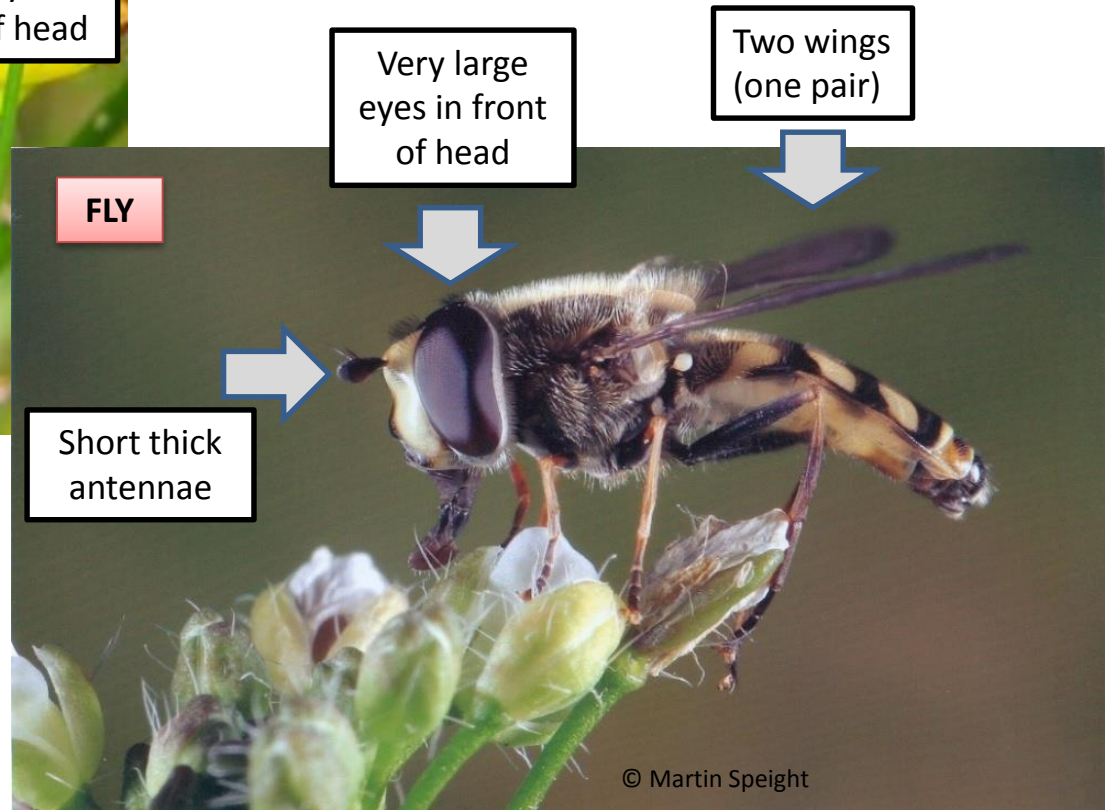
<b>BEES</b>	<b>FLIES</b>
4 wings	2 wings
Long thin antennae	Short thick antennae
Large eyes to side of head	Large eyes in front of head
Hairy	Not hairy
Bees don't hover	Flies can hover
Bees often (but not always) fold their wings over their back	Flies hold their wings out at an angle from their bodies



# CHALLENGE 1: HOW DO I KNOW IT'S A BEE AND NOT A FLY?



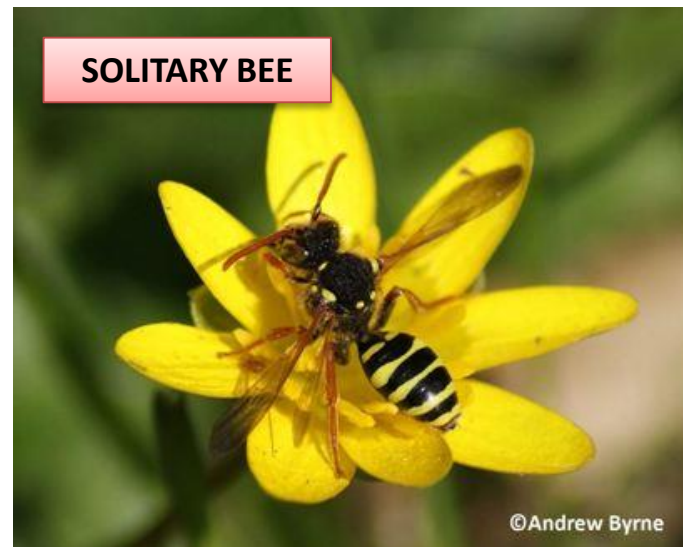
Four wings (2 pairs). One main and a smaller pair underneath (can be hard to see)





# CHALLENGE 1: HOW DO I KNOW IT'S A BEE AND NOT A WASP?

<b>BEEES</b>	<b>WASPS</b>
Don't have pinched abdomen	Can have pinched abdomen
More 'friendly' looking	More armoured and aggressive looking
Carry pollen	Don't carry pollen



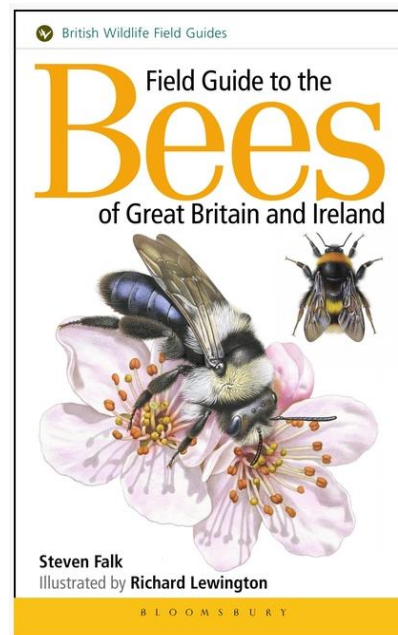
# CHALLENGE 2: HOW DO I KNOW WHAT GENUS IT IS?

## RECOMMENDED KEY:

AIDGAP SERIES (BRITISH FIELD COUNCIL)

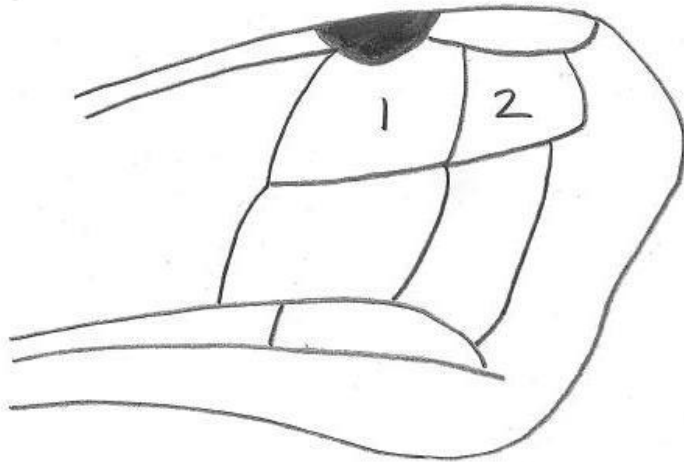
Willmer (1985) *Bees, Ants and Wasps - the British Aculeates*

## RECOMMENDED GUIDE:



# SOLITARY BEES IN IRELAND - 77 species within 12 genera

These 5 genera all have  
2 cells in their wings



## ***Osmia*** (Mason bees)

- ✓ 2 Irish species
- ✓ Chunky bee
- ✓ Stores pollen on the underside of its rounded abdomen
- ✓ *O. aurulenta* is coastal and nests only in empty snail shells
- ✓ *O. bicornis (rufa)* is rare, known only from cities: Dublin, Belfast, Cork, Waterford. Possibly deliberately introduced (commercially available in UK as a garden pollinator).

## ***Megachile*** (Leaf cutter bees)

- ✓ 5 Irish species
- ✓ Large, chunky bee
- ✓ Stores pollen on the underside of its abdomen
- ✓ Leaf cutter bees cut out leaves/petals and use these to build nests
- ✓ Found in a range of habitats

## ***Hylaeus*** (White faced bees)

- ✓ 4 Irish species
- ✓ Small, black bees (5-7mm)
- ✓ Face with yellow or white markings
- ✓ Almost hairless
- ✓ Found in a range of habitats

## ***Anthidium*** (Wool carder bees)

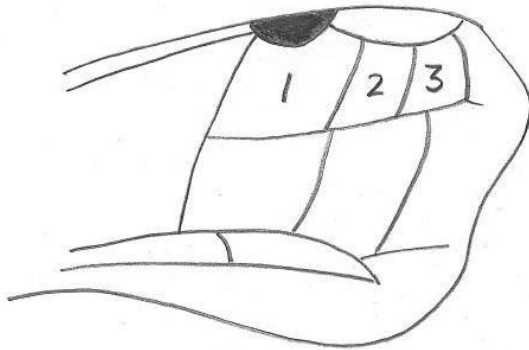
- ✓ 1 Irish species
- ✓ Large bee (8-12mm)
- ✓ Distinctive yellow markings on the sides of the abdomen, head & legs
- ✓ Stores pollen on the underside of its abdomen
- ✓ First recorded in Wexford in 2015

## ***Coelioxys*** (Sharp tailed bees)

- ✓ 2 Irish species
- ✓ Eyes hairy
- ✓ Medium sized bee (9-15mm)
- ✓ Tapered abdomen, particularly females
- ✓ Rare but found in a range of habitats
- ✓ Cuckoo bees – they parasitise *Megachile* nests

# SOLITARY BEES IN IRELAND - 77 species within 12 genera

These 7 genera all have  
3 cells in their wings



## **Andrena** (Mining bees)

- ✓ 26 Irish species
- ✓ Very variable in form and occur from large species to very small
- ✓ Found in a variety of habitats
- ✓ The solitary bee most often spotted by most people

## **Nomada** (Cuckoo bees)

- ✓ 12 Irish species
- ✓ Can resemble wasps – often have black, yellow or red stripes on abdomen
- ✓ Cuckoo bees – they parasitise *Andrena* nests

## **Colletes**

- ✓ 4 Irish species
- ✓ Medium sized bee (8-13mm)
- ✓ Distinctive bands of white hair on the abdomen
- ✓ *C. floralis*, *C. similis* and *C. daviesanus* (v. rare) are all coastal
- ✓ Ireland holds a significant proportion of the world population of *C. floralis*
- ✓ *C. succinctus* occurs only on bog/heath and is a late summer species

## **Halictus** (Sweat bees)

- ✓ 2 Irish species
- ✓ *H. rubicundus*, large, very common.
- ✓ *H. tumulorum*, small, less common

## **Lasioglossum** (Sweat bees)

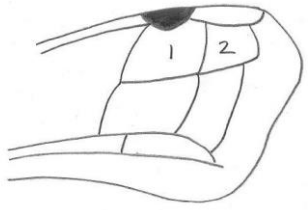
- ✓ 11 Irish species
- ✓ Mainly small bees, often black
- ✓ Three of the 11 species look metallic
- ✓ Found in a variety of habitats
- ✓ Difficult to identify to species

## **Sphecodes** (Cuckoo sweat bees)

- ✓ 7 Irish species
- ✓ Small to medium sized (6-12mm)
- ✓ Black with red on the abdomen
- ✓ Cuckoo bees – they parasitise *Halictus/Lasioglossum* nests
- ✓ Very difficult to identify to species

## **Xylocopa** (Carpenter bees)

- ✓ 1 species
- ✓ Very large bee
- ✓ Not unlike a giant black blue bottle!
- ✓ Nests in dead wood
- ✓ Only 1 record – Waterford City 2007



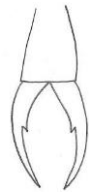
2 cells in wing

Very simple key to the genera known from Ireland

Underside of abdomen with dense hairs

Underside of abdomen not hairy

Feet with prominent pad between claws



Feet without a pad between claws

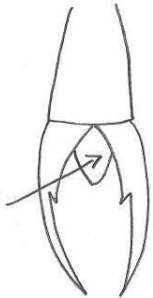
Eyes hairy. Abdomen with pointed tip

Eyes not hairy. Small black bee, face with yellow/white markings

**Osmia**

**Coelioxys**

**Hylaeus**



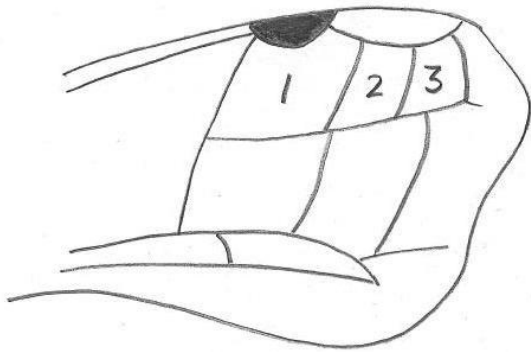
Yellow markings on sides of abdomen, head & legs

No yellow markings on sides abdomen, head & legs

**Anthidium**

**Megachile**

Very simple key to the genera known from Ireland



3 cells in wing

Two genera are very distinctive

Xylocopa

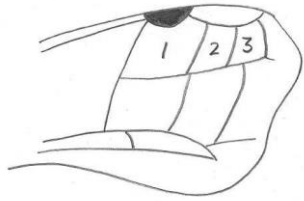


Very large entirely black bee with dark wings

Sphecodes



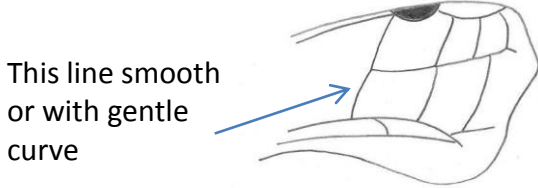
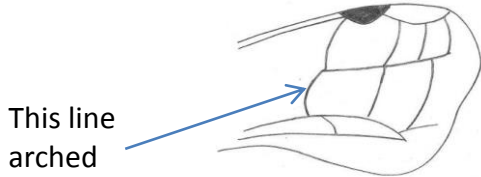
Almost hairless, black & red abdomen



3 cells in wing

Very simple key to the genera known from Ireland

Not *Xylocopa* or *Sphecodes*



Very obvious hair bands on abdomen

Hair bands absent or not obvious

Hairy

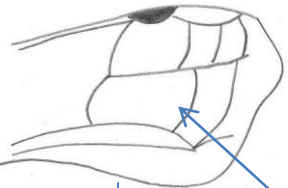
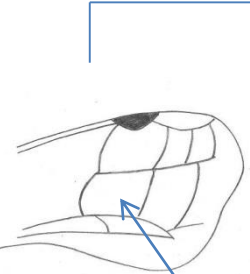
Almost hairless

**Lasioglossum**

**Andrena**

**Nomada**

Wasp like – abdomen with yellow, black or red bands



Cell on left similar to one on right

Cell on left larger than one on right

**Colletes**

**Halictus**



## CHALLENGE 3: IS IT A MALE OR A FEMALE?

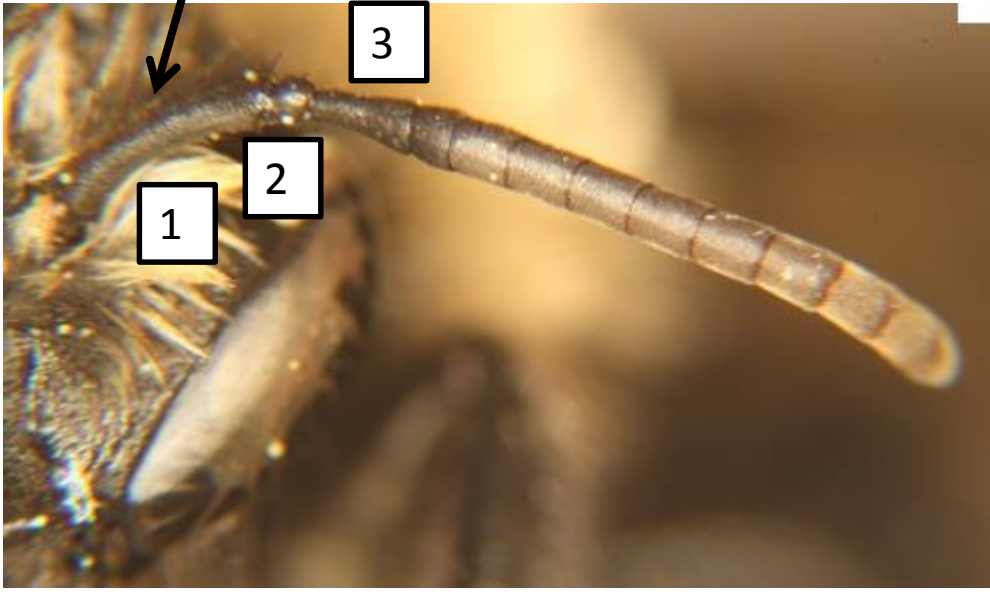
1. Length of the antennae. Males have 13 segments, females have 12. You need to use a microscope.
  
2. Only females have a sting

This is very important because you need to use entirely different keys for male and female solitary bees.

In general males are more difficult to identify to species than females

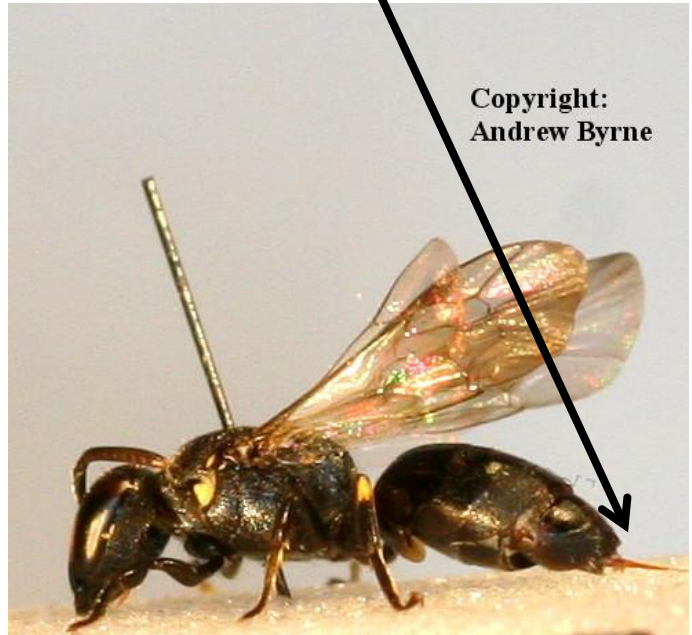
# CHALLENGE 3: IS IT A MALE OR A FEMALE?

I find it easier to start at this end



Counting antennal segments

The sting protrudes like a needle from the end of the abdomen



Copyright:  
Andrew Byrne

Checking for a sting

## WHERE TO START?

The Irish Pollinator Initiative website provides information on some distinctive and easily identifiable solitary bees in Ireland

+ All-Ireland Pollinator Plan

+ Bees

+ Hoverflies

+ Get involved

Bumblebee Monitoring Scheme

10 pollinator challenges

Rare Species watch

Solitary bees for beginners

Earliest bumblebee sightings

Can you find this rare species?

Track expansion in the Mountain bumblebee

Events

ID guides

Record biodiversity

Events

Standards

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## Solitary bees for beginners

There are 77 different species of solitary bee in Ireland. Identifying solitary bees to species level generally involves taking a specimen and using a stereo-microscope along with a specialist key. However, there are a small number of species that can be identified in the field by sight. If you spot any of these species please submit your record to help us improve our knowledge of their distribution.

### Solitary bees that can be identified in the field

#### *Andrena cineraria* (Ashy mining bee)



#### Key identification features:

- The females are black, and have two distinctive grey hair bands across the thorax (there are no other solitary bees like this in Ireland)
- Large sized species (13-16mm)
- It is a spring species and will generally be seen between March- June. The earliest it has been recorded in Ireland is 22nd March (2011).
- Widespread. It is found in a range of habitats, but in Ireland it often relies on Willow as an early forage source
- It nests in the ground. The nest entrances will be surrounded by a volcano-like mound of excavated spoil. Nests are often in dense aggregations
- In the UK, *A. cineraria* has been increasing in abundance and is common in urban environments

Thanks to all those who have  
contributed photographs to the Data  
Centre and made development of this  
guide possible